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THE EMERALD MONITOR *VARANUS PRASINUS* (SCHLEGEL): AN ADDITION TO THE AUSTRALIAN MAINLAND HERPETOFAUNA

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ABSTRACT

The occurrence of the Emerald Monitor *Varanus prasinus* (Schlegel) on the Australian mainland, is confirmed by the collection of three specimens from the McIlwraith Range area, Cape York Peninsula. These specimens are compared with the four currently recognized subspecies of this monitor and assigned tentatively to the nominate race. Difficulties encountered in the definition of these subspecies are briefly outlined.

The Emerald Monitor (*Varanus prasinus*) is widely distributed throughout mainland Papua New Guinea, West Irian and adjacent island groups. This monitor may be distinguished from other *Varanus* species by the combination of the following features; round nostril, slightly compressed tail which lacks a median double keel, and the presence of transverse supraoculars (Cogger 1975; De Rooij 1915; Mertens 1942, 1959). Mertens (1959), in the most recent treatment of Indo-Australian *Varanus* species, recognises four subspecies of *V. prasinus,* all from New Guinea and adjacent islands:

1. *Varanus prasinus prasinus* (Schlegel): mainland New Guinea, Misol, Salawatti, Goodenough, 'islands of Torres Strait' and the d'Entrecasteaux Archipelago.
2. *Varanus prasinus beccarii* (Doria): Aru Islands, and possibly from Fak Fak (West Irian).
3. *Varanus prasinus bogerti* Mertens: the d'Entrecasteaux Archipelago.
4. *Varanus prasinus kordensis* (A.B. Meyer): Biak, northwest New Guinea.

Australian records of *V. p. prasinus* (from the Torres Strait only) are based on Gunther (1877, 1879) and Boulenger (1885) who record *Varanus prasinus* as occurring on islands of Torres Strait, Cornwallis (=Dauan), and Murray Islands. Cogger (1975) notes unconfirmed reports of this monitor from northern Cape York Peninsula but, until now, there have been no specimen records of *Varanus prasinus* from mainland Australia.

In August 1978, an unusual dark specimen of *Varanus* was collected by the author at Buthen Buthen, east of Coen, far northern Queensland. Subsequently, two additional similar specimens were collected in the same area by officers of the National Parks and Wildlife Service. Examination of these specimens confirms the presence of *V. prasinus* on the Australian mainland.

MATERIALS AND METHODS

The three Cape York Peninsula specimens were compared with specimens of *V. prasinus* in the Queensland Museum (QM) and Australian Museum (AM) collections. In addition, the type of *Varanus prasinus bogerti* in the American Museum of Natural History (AMNH 41639), was also examined and compared with these specimens.

The following measurements were recorded in millimeters; snout–vent length (SVL), tail length (TL), head length (HL), head depth (HD), head width (HW), eye–naris distance (EN), internarial distance (IN), and snout to anterior edge of naris (SN). The values are expressed by the mean value followed by the range in parentheses.

The term 'New Guinea' used below refers to the whole island exclusive of political subdivisions.

Description of Australian Mainland Secimens of *Varanus prasinus*

SVL 237·6 (214–250); TL 479·6 (425–524); HL 42·0 (36·0–49·7); HD 20·6 (16·2–23·9); HW 23·7 (19·2–26·7); EN 13·5 (12·6–14·2); IN 8·3 (7·4–8·8); SN 10·2 (9·5–11·2).

Head long and narrow, about twice as long as broad and 1·7 times as long as high. Snout rounded in profile. Canthus rostralis indistinct, rounded and slightly elevated above the nostril which is closer to tip of snout than eye. Nostril rounded, inclined posteriorly in lateral aspect and visable from above (see Plate 1). Ear opening large, oval and more or less vertically orientated.

Dorsal head scales variable in size and shape, largest between snout and interorbital region (Plate 1). Individual scales well demarcated by deep suture lines, not forming a continuous layer. Individual scales may be pitted, weakly tuberculate or smooth, with structures demarcated by black pigmentation. A series of about five transversely enlarged supraoculars, some or most of which may be divided. Occipital scales similar, but smaller in size and less smooth. 35–36 scales around head from rictus to rictus. Temporal scales, smaller than the dorsal head scales; individual temporal scales subequal, and elliptical in shape, forming oblique rows (Plate 1). Nuchal scales transversely enlarged, rounded in profile. Neck scales becoming longer than wide posteriorly. Low keels present on last third of neck. All neck scales rounded in profile.

Anterior chin shields little differentiated except for enlarged pair immediately posterior to mental. Mental groove weak. Dorsal body scales longitudinally keeled, rectangular or slightly rounded in profile; in 90–99 scale rows at midbody. Lateral scales subequal. Ventral scales with apical pits, in 86–89 rows from gular fold to hindlimb insertion. Limbs well developed with strong claws. Palms and soles black. Approximately 35–38 smooth lamellae under 4th toe, (except for 6–10 distal lamellae) divided and gradually merging with the similarly shaped scales of sole. Caudal scales keeled, subequal, and in regular annuli to tail tip. Proximal caudal scales with apical pits, each being replaced distally by a short spine. Plate 1 shows QM J31566 in dorsal view.

Colouration: All three specimens are predominantly black dorsally and laterally on both body and limbs. The area from the tip of snout to the interorbital area is light bluish green, with black suture lines (except on snout itself). A short yellowish bar is present above the ear opening and may extend forward towards the posterior corner of the eye. Individual body scales may have tiny yellowish spots, which when viewed from a distance, combine to form indistinct chevrons across the body. These indistinct chevrons are separated by narrow areas of black. These spots are more noticeable after preservation than in life. Yellowish colour is more noticeable on the tail where thin bands are present in middle of each annuli. Ventral surface of body and limbs pale yellowish-green.

Comparison with Recognized Subspecies

Using Mertens (1942, 1952) data, these specimens may be distinguished from *V. p. beccarii* (Doria) and *V. p. kordensis* (A.B. Meyer) by respective colouration differences (dark dorsum/light venter vs dark dorsum and venter vs green and black network pattern on dorsum/light venter). The Cape York specimens also lack the prominent neck keels and narrow, pointed snouts of these two subspecies. Comparison with the type of *V. p. bogerti* Mertens (AMNH 41369) shows that the three Australian specimens differ from this subspecies on the basis of more rounded snouts, larger dorsal head scales, weakly keeled neck scales and possession of a regular, oblique series of temporal scales.

Separation from the nominate race, *V. p. prasinus* (Schlegel), is difficult. Only two consistent differences were apparent when comparing New Guinea *V. p. prasinus* with the Cape York specimens. These differences being the black (as opposed to green) dorsal colouration and the more prominent body keels of the Australian specimens. Ventral scale counts overlap (New Guinea; 71–86, N=9: Cape York; 86–89, N=3), while midbody scale counts for Cape York Peninsula specimens (90–99: N=3) fall within the range of variation of New Guinea material (74–105: N=9). Minor differences were detected with respect to the degree of 'pitting' on head scales, depth of dorsal head scale sutures and the appearance of nuchal and neck scales. However, as New Guinea *V. p. prasinus* showed variation among themselves in regard to these features, their diagnostic value was considered questionable.

Field Observations

The Buthen Buthen specimen (QM J31566) was collected in semi-deciduous mesophyll vine forest (altitude 60–100 m). It was discovered climbing through the crowns of secondary story vegetation, which formed a more or less continuous layer three to four meters above ground level. The Leo Creek Road specimen (QM J35450) was collected from the outer surface of

the tree canopy in deciduous vine thicket (altitude 280–300 m). It was estimated to be some fifteen meters above ground level (J. Winter, pers. comm.). The specimen from Lankelly Creek (QM J35451), was collected in *Eucalyptus*-dominated open forest within 50 meters of deciduous vine thicket (altitude 520–540 m). It was first seen on the ground, then collected from a standing eucalypt (J. Winter, pers. comm.).

Mertens (1942, 1950) notes that the tail tip in both *V. p. prasinus* and *V. p. bogerti* is 'somewhat prehensile'. The prehensile nature of the tail tip of QM J31566 was readily apparent before collection and prior to preservation. In addition to the prehensile tail-tip, climbing in these monitors appears to be facilitated by the structure of the surface tissue on the soles of fore and hind feet. These surfaces are covered by soft black tissue, which feels sticky on contact and appears to give additional support to the climbing animal. An investigation of the structure of this tissue is in progress.

The localities from where the species were collected are shown in Fig. 1.

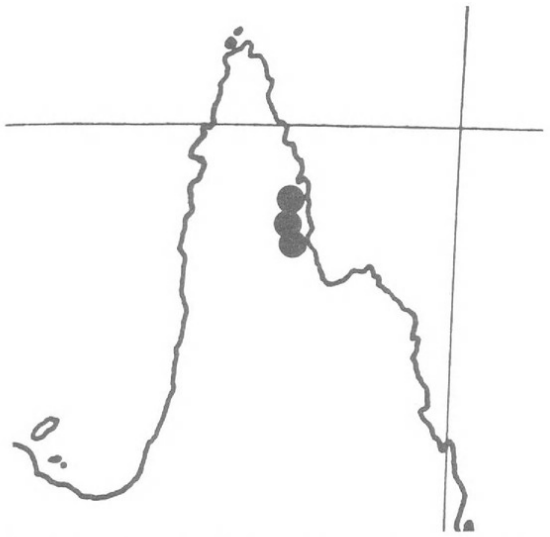

FIG. 1: Distribution of *Varanus prasinus* in Queensland.

DISCUSSION

Although Cape York Peninsula specimens are distinct from *V. p. prasinus* in colour and body keels, there are no apparent consistent differences in the structure and shape of head scales and the condition of the nuchal and neck scales. In the absence of convincing evidence to the contrary, it is felt that the Cape York population should be tentatively assigned to the nominate race of this monitor *(Varanus prasinus prasinus).*

Two considerations have largely influenced this decision. The first involves the rather confused taxonomy of *prasinus* subspecies. Mertens (1959), while recognizing the four subspecies, drew attention to the existence of a number of problematical populations of this monitor; *kordensis*-like individuals from the mainland and small island groups; *beccarii*-like individuals from the south-west mainland of New Guinea; and a *bogerti* 'relative' from the d'Entrecasteau group. A specimen (QM J1190) apparently collected from Rossel Island (Louisiade Archipelago) presents a further complication. *V. prasinus* has not previously been reported from this island group, and this specimen was not examined by Mertens. It is not possible to satisfactorily assign it to any existing subspecies using available literature or specimens.

The second consideration concerns the apparent trend of *V. prasinus* to become increasingly melanistic in outlying populations. The greatest degree of melanism is found in the insular forms *V. p. bogerti* and *V. p. beccarii,* a lesser degree in the *'kordensis'* pattern and the least in predominantly green *V. p. prasinus.* Cape York specimens appear intermediate between the fully melanistic and *'kordensis'* forms. Until a suitable series of this monitor from southern New Guinea, Torres Strait and northern Cape York Peninsula is available for investigation, the possibility of clinical variation along this route precludes the description of a Queensland subspecies.

SPECIMENS EXAMINED

Varanus prasinus bogerti: AMNH 41693, Fergusson Island, d'Entrecasteax Archipelago.

Varanus prasinus prasinus: New Guinea — QM J2218, St. Joseph's River; AM R1205, no data; R6234, 'New Guinea'; R11492, R12533, Bulolo Valley; R16760, mouth of Oriomo River near Daru; R17963, 'Papua'; R24343, Fly River; R64790, Bristow Island near Daru; R65300, Daru Island, Western Province. Cape York — QM J31566, Buthen Buthen, Nesbit River; J35450, Leo Creek Road, 17 km NE. Mt Croll; J35451, Lankelly Creek, 10 km NE. Coen.

Varanus prasinus (subsp.?): QM J1190, Rossel or Russell Island New Guinea.

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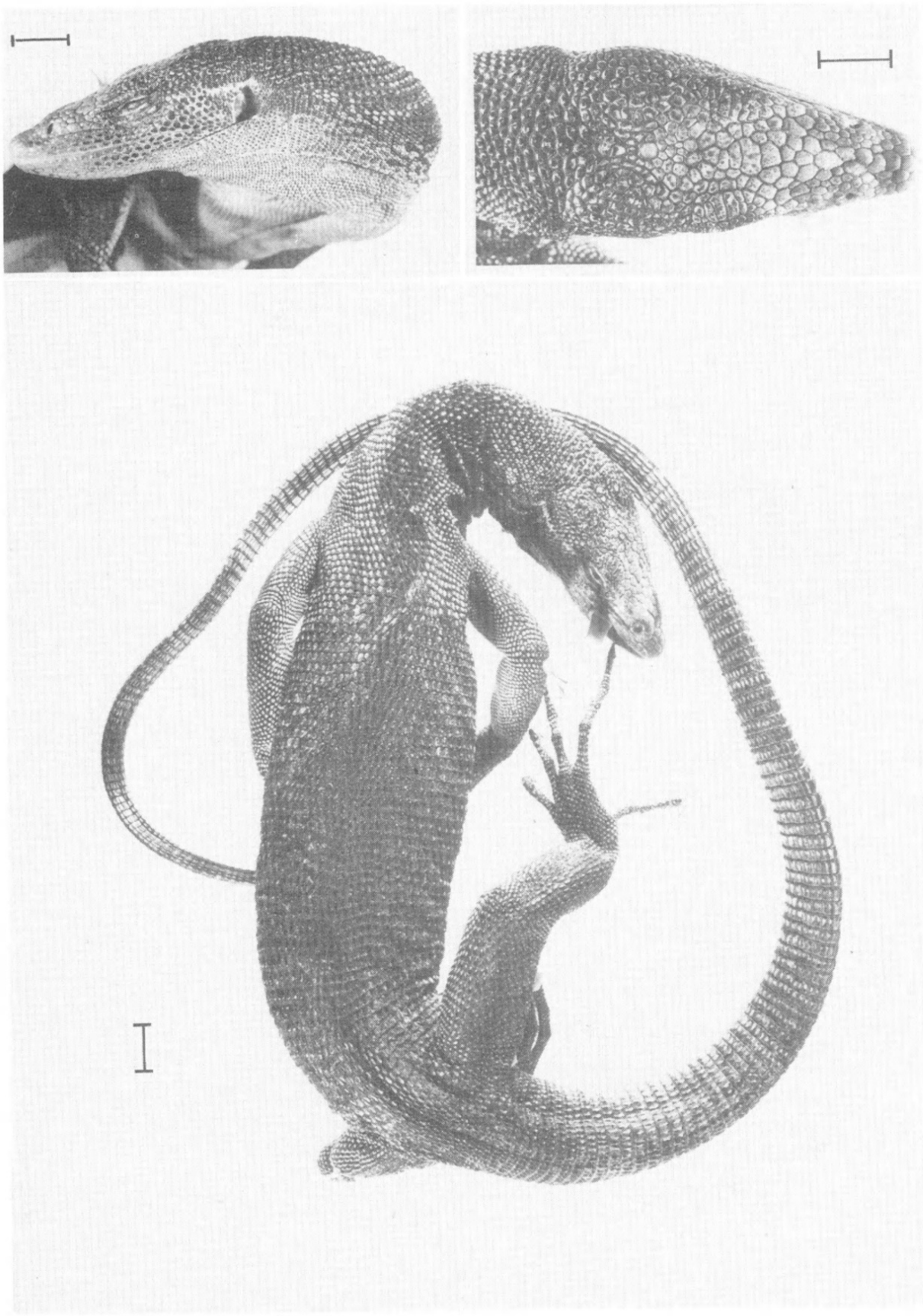
PLATE 1

Varanus prasinus (QM J31566) Buthen Buthen, Nesbit River, Cape York Peninsula (scales in centimetres).

Top left: Lateral aspect of head.

Top right: Dorsal aspect of head.

Bottom: Dorsal view of body.



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